

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A transparent substrate, comprising a functional layer based on silver, and an antireflection coating on at least one of its faces with solar control or low-emissivity functionality, which is made of a thin-film multilayer (A) of dielectric material with alternately high and low refractive indexes, wherein at least one of the layers of high refractive index is positioned above the functional layer in relation to the substrate and wherein the at least one high refractive index layer has a refractive index of from about 2.2 to about 2.25 and comprises a mixed silicon zirconium nitride, the refractive index of at least one of the high-index layers being between 2.10 and 2.30, wherein the atomic percentage of zirconium within the high-index layer is such that Si/Zr is between 4.6 and 5.

Claims 2-3 (Cancelled).

Claim 4 (Currently Amended): The substrate as claimed in claim 1, which comprises, in succession:

- a high-index first layer (1) having a refractive index n_1 of between 2.1 and 2.3 about 2.20 to about 2.25 and a geometrical thickness e_1 of between 5 and 50 nm;
- a low-index second layer (2) having a refractive index n_2 of between 1.35 and 1.65 and a geometrical thickness e_2 of between 5 and 50 nm;
- a high-index third layer (3) having a refractive index n_3 of between 2.1 and 2.3 and a geometrical thickness e_3 of between 40 and 120 nm; and
- a low-index fourth layer (4) having a refractive index n_4 of between 1.35 and 1.65 and a geometrical thickness e_4 of between 40 and 120 nm.

Claim 5 (Previously Presented): The substrate as claimed in claim 4, wherein the low-index second layer (2) and/or the low index fourth layer (4) are based on silicon oxide, silicon oxynitride and/or silicon oxycarbide or on a mixed silicon aluminum oxide.

Claim 6 (Previously Presented): The substrate as claimed in claim 4, wherein the high-index first layer (1) and/or the high-index third layer (3) consist of a superposition of several high-index layers, at least one of the layers comprising a mixed silicon zirconium nitride.

Claim 7 (Previously Presented): The substrate as claimed in claim 1, wherein the light reflection on the side where it is provided with the thin-film multilayer is lowered by a minimum amount of 3 or 4% at normal incidence.

Claim 8 (Previously Presented): The substrate as claimed in claim 1, wherein the colorimetric response of its light reflection on the side where it is provided with the thin-film multilayer is such that the corresponding value of b* in the (L*,a*,b*) colorimetry system is negative, for a 0° angle of incidence.

Claim 9 (Previously Presented): The substrate as claimed in claim 1, wherein the colorimetric response of its light reflection on the side where it is provided with the thin-film multilayer is such that the variation in the parameters expressed in the (L*,a*,b*) colorimetry system with angle of incidence varying between 0° and 70° is limited in absolute value to 10.

Claim 10 (Previously Presented): The substrate as claimed in claim 1, wherein the multilayer comprises at least one high-index layer based on a mixed silicon zirconium nitride

so that it has a very high mechanical durability, such that ΔH in the Taber test is less than 4% after 650 revolutions.

Claim 11 (Previously Presented): Multiple glazing, comprising at least two substrates as claimed in claim 1, wherein the two glass substrates are joined together by a sheet of thermoplastic material or by an intermediate seal in the case of a double glazing unit, said substrate being provided on the opposite side from the join:

- either with an antireflection multilayer;
- or with a coating having another functionality,

of solar-protection, low-emissivity, antisoiling, antifogging, antirain, heating or electromagnetic shielding, wherein said coating optionally comprises another functionality to be on one of the faces of the substrates turned toward the thermoplastic joining sheet, said substrate being provided on the joining side with a coating having electromagnetic wave shielding properties.

Claim 12 (Currently Amended): A transparent substrate provided with a thin-film multilayer comprising an alternation of n functional layers based on silver having reflection properties in the infrared and/or in solar radiation and n+1 coatings with antireflection properties with solar control or low emissivity functionality composed of one or more layers of dielectric material, wherein each functional layer is placed between two coatings, wherein at least one of the layers of dielectric material of the coating is positioned above the functional layer in relation to the substrate and wherein at least one of the dielectric material layers is based on a mixed silicon zirconium nitride, the Si/Zr atomic percentage ratio being between 4.6 and 5 and its refractive index being from about 2.2 to about 2.25~~between 2.0 and 2.3~~.

Claim 13 (Previously Presented): The substrate as claimed in claim 12, wherein the multilayer comprises a single functional layer placed between two coatings.

Claim 14 (Previously Presented): The substrate as claimed in claim 12, wherein the multilayer comprises two functional layers alternating with three coatings.

Claim 15 (Previously Presented): The substrate as claimed in claim 12, wherein the multilayer comprises three functional layers alternating with four coatings.

Claim 16 (Cancelled).

Claim 17 (Currently Amended): The substrate as claimed in claim 12, which comprises:

a first high-index dielectric layer having a refractive index of ~~between 2.1 and 2.3~~
about 2.20 to about 2.25 and a geometrical thickness of between 10 and 40 nm;
a first functional layer based on silver; and
a second high-index dielectric layer having a refractive index of between 2.1 and 2.3 and a geometrical thickness of between 15 and 40 nm.

Claim 18 (Currently Amended): The substrate as claimed in claim 12, which comprises:

a first high-index dielectric layer having a refractive index of ~~between 2.1 and 2.3~~
about 2.20 to about 2.25 and a geometrical thickness of between 10 and 40 nm;
a first functional layer based on silver;

a second high-index dielectric material having a refractive index of between 2.1 and 2.3 and a geometrical thickness of between 5 and 70 nm;

a second functional layer; and

a third high-index dielectric layer having a refractive index of between 2.1 and 2.3 and a geometrical thickness of between 10 and 40 nm.

Claim 19 (Currently Amended): The substrate as claimed in claim 12, which comprises:

a first high-index dielectric layer having a refractive index of ~~between 2.1 and 2.3~~
about 2.20 to about 2.25 and a geometrical thickness of between 10 and 40 nm;

a first functional layer based on silver;

a second high-index dielectric layer having a refractive index of between 2.1 and 2.3 and a geometrical thickness of between 5 and 70 nm;

a second functional layer;

a third high-index dielectric layer having a refractive index of between 2.1 and 2.3 and a geometrical thickness of between 5 and 70 nm;

a third functional layer; and

a fourth high-index dielectric layer having a refractive index of between 2.1 and 2.3 and a geometrical thickness of between 10 and 40 nm.

Claim 20 (Previously Presented): The substrate as claimed in claim 19, wherein the layers absorbent in the visible, positioned beneath at least one functional layer, are based on a metal or a metal alloy, with a thickness of at least 1 nm.

Claim 21 (Previously Presented): The substrate as claimed in claim 19, wherein the layers absorbent in the visible, positioned on top of at least one functional layer, are based on a metal or a metal alloy, with a thickness of at least 1 nm.

Claim 22 (Previously Presented): The substrate as claimed in claim 12, which comprises a cover layer based on an oxide and/or nitride.

Claim 23 (Previously Presented): The substrate as claimed in claim 1, which comprises a DLC-based overcoat.

Claim 24 (Previously Presented): The substrate as claimed in claim 23, wherein the thickness of the overcoat is between 5 and 10 nm.

Claim 25 (Previously Presented): The substrate as claimed in claim 12, wherein each of the functional layers is on top of a multilayer coating whose last layer is based on zinc oxide or on a mixed oxide of zinc and another metal.

Claim 26 (Previously Presented): The substrate as claimed in claim 12, wherein each of the functional layers is beneath a multilayer coating whose first layer is based on zinc oxide or on a mixed oxide of zinc and another metal.

Claim 27 (Previously Presented): The substrate as claimed in claim 26, wherein the layer based on zinc oxide or on a mixed oxide of zinc and another metal is stoichiometric in oxygen.

U.S. application serial no. 10/567,901
Reply to Official Action of June 4, 2009

Claim 28 (Previously Presented): The substrate as claimed in claim 1, which is capable of undergoing a heat treatment.

Claim 29 (Previously Presented): The substrate as claimed in claim 12, wherein the multilayer is as follows:

Zr: Si₃N₄/ZnO/Ti/Ag/ZnO/Zr:Si₃N₄/ZnO/Ti/Ag/ZnO/ Zr:Si₃N₄ or
Zr:Si₃N₄/ZnO/Ag/NiCr/ZnO/Zr:Si₃N₄
optionally with thin layers of partially or completely oxidized metal placed on one of the faces of at least each of the silver layers.

Claim 30 (Previously Presented): A glazing comprising at least one substrate as claimed in claim 1, wherein the glazing is in the form of laminated glazing, a symmetrical glazing or multiple glazing.

Claims 31-32 (Canceled).

Claim 33 (Previously Presented): A plane or tubular, magnetron sputtering target for obtaining at least one layer comprising Si_xZr_yAl_z on a portion of the surface of a substrate as claimed in claim 1, wherein the Si/Zr ratio at the target is slightly different from that of the layer, with a difference of 0.1 to 0.5.